EXHIBIT A

IN THE UNITED STATES BANKRUPTCY COURT
FOR DISTRICT OF DELAWARE

IN RE:	(	
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W.R. GRACE & CO., et al.,	(	Bankruptcy No. 01-01139 (JKF)
	(	Jointly Administered
	(	
Debtor(s)	(	Chapter 11
	(	
	(	Related to Doc. Nos. 4007, 4009, 4012, 4018, 4022,
	(	4028, 4173, 4175, 4202, 4204, 4205, 4206, 4291,
	(	and 4294.
	(	

MEMORANDUM OPINION[1]

The matters before the court are the opposing Motions for Summary Judgment[2] of the Debtors, W.R. Grace & Company ("Grace"), and a group of property damage claimants, Zonolite Attic Insulation Claimants ("ZAI Claimants"), and the ZAI Claimants' Motion for Partial Summary Judgment[3] regarding the threshold issue of what science demonstrates with regard to whether or not the presence of ZAI[4] in the home creates an unreasonable risk of harm. The court has consolidated the actions of the ZAI Claimants pursuant to Fed.R.Civ.P. 42(a) for

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[1]The court's jurisdiction was not at issue. This Memorandum Opinion constitutes our findings of fact and conclusions of law.

[2] Doc. Nos. 4009 and 4018.

[3] Doc. No. 4007 and Corrected Zonolite Attic Insulation Claimants' Memorandum in Support of Motion for Partial Summary Judgment, Doc. No. 4028.

[4] ZAI is a brand of vermiculite attic insulation ("VAI"). Where applicable, the use of the terminology "VAI", "vermiculite attic insulation", or "vermiculite insulation" refers to all brands (within which ZAI is included). "ZAI" only refers to Grace's product, Zonolite Attic Insulation.

purposes of determining this common question.[5] The ZAI Claimants argue that there is no material issue of fact and that ZAI creates an unreasonable risk. Grace disagrees that ZAI creates an unreasonable risk and argues that Claimants have not met their burden to proffer valid scientific evidence sufficient to create a genuine issue of material fact on whether ZAI creates unreasonable risk of harm.

At the time Grace filed bankruptcy, a number of putative class actions in various state and federal courts had been filed for property damages against Grace on behalf of homeowners whose properties contained Zonolite Attic Insulation.[6] Upon filing bankruptcy, Grace proposed that the claims be adjudicated through the filing of individual proofs of claim and counsel for ZAI Claimants argued for a single proof of claim to be litigated on behalf of a class of ZAI Claimants. Pursuant to §501(c) of the Bankruptcy Code, Grace filed proofs of claim on behalf of the ZAI Claimants.[7] ZAI Claimants moved to strike these proofs of claim[8] and the court denied their motion at a May 20, 2002, hearing and permitted Claimants to file amended proofs of claim

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[5] Grace filed a Motion to Consolidate the Actions of ZAI Claimants Pursuant to Fed.R.Civ.P. 42, Doc. No. 4010, and ZAI Claimants filed a response, Doc. No. 4203, in which they did not oppose consolidation. No written order was entered, but this court orally granted the motion to consolidate, and now confirms that grant.

[6] In *Barbanti, et al. v. W.R. Grace & Co., et al.*, No. 00-2-01756-6 (Super. Court. Wash. Dec. 20, 2000), the court granted plaintiff's motion for class certification pursuant to Fed.R.Civ.P. 23(b)(2). "The class shall be composed of and defined as: All owners or occupiers of real property located in the state of Washington in which Zonolite Attic Insulation has been installed." *Id.*

[7] The proofs of claim were dated April 12, 2002, and were filed by Grace on behalf of Marco Barbanti, Ralph Busch, Paul Price, John and Margery Prebil, William Harris, Jan Hunter, Edward Lindholm, John Sufnarowski, James and Doris McMurchie and Stephen Walsh.

[8] Claimants' Motion to Strike Proofs of Claim and Response to Debtors' Proposed Order Setting Initial Schedule for Litigation Concerning Zonolite Attic Insulation Product Risk, Doc. No. 2045.

if they chose.[9] Claimants filed amended proofs of claim on May 30, 2002.[10] Grace filed objections to ZAI Claimants' proofs of claim[11] and ZAI Claimants filed a response asserting the validity of their claims.[12]

Prior to a decision on whether to require individual proofs of claim or consider a single proof of claim on behalf of a class, and in order to determine whether a ZAI claims bar date should be established and, if so, what type of notice program would be appropriate, this court decided to address the threshold issue of whether ZAI poses an unreasonable risk of harm, under the assumption that any property damage claim ultimately arises from the risk of someone getting sick from the contaminated property.[13] The court was concerned, based on the alleged huge number of potential claims (published estimates provided by Claimants put the number of

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[9] May 20, 2002, Hearing Transcript, Doc. No. 2162, at 93.

[10] Notice of Filing of Amended Proof of Claim of John and Margery Prebil (Zonolite Attic Insulation), Doc. No. 2131; Notice of Filing of Amended Proof of Claim of Paul Price (Zonolite Attic Insulation), Doc. No. 2132; Notice of Filing of Amended Proof of Claim of Marco Barbanti (Zonolite Attic Insulation), Doc. No. 2133; Notice of Filing of Amended Proof of Claim of Ralph Busch (Zonolite Attic Insulation), Doc. No. 2134. The legal bases alleged for Debtors' liability in the amended claims included strict product liability, negligence, deceit, fraudulent concealment, fraud by non-disclosure, and unfair and deceptive business practices. The amended claims range between $10,000 and $40,000.

[11] Debtors' Omnibus Objection to Zonolite Attic Insulation Proofs of Claim, Doc. No. 2193 (entered on June 10, 2002).

[12] Response of Zonolite Attic Insulation Property Damage Claimants to Debtors' Objections to the Zonolite Attic Insulation Proofs of Claim, Doc. No. 2363 (entered on July 10, 2002).

[13] For further explanation of the reasoning behind the "ZAI Science Trial" see Sept. 23, 2002, Hearing Transcript, Doc. No. 2779, at 83-86; Oct. 18, 2004, Hearing Transcript, Doc. No. 6847 at 93-100; and the Oct. 21, 2002, Order, Doc. No. 2855.

homes with ZAI at 3 million-30 million),[14] that special procedures would be needed to administer this claims process, and the type of process would be informed by the determination of the risk of harm.

On October 21, 2002, this court entered an order setting forth a pretrial discovery and motion practice schedule pertaining to the anticipated science trial ("ZAI Science Trial"). The scope of discovery was limited to what science demonstrates with regard to whether ZAI creates an unreasonable risk of harm.[15] Months of discovery ensued, including scientific testing by numerous experts. The parties engaged in protracted, but unsuccessful, settlement talks. After receiving volumes of evidence and briefs from both sides, a hearing on cross motions for

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[14] Doc. No. 4204 at 26, n.88, citing Susan Warren, *EPA Plans Asbestos Removal From Homes in Libby, Mont.*, Wall St. J., May 13, 2002, at B2 [Exhibit 79]; Kathleen McLaughlin, *W.R. Grace Urging EPA to Quit Emergency Plan for Libby*, Mont. Forum, Apr. 14, 2002 [Exhibit 80]; Greg Gordon, *Magnitude of Asbestos Scare Grows*, Modesto Bee, Jan. 21, 2003 [Exhibit 81]; Jay Romano, *Lesser-Known Form of Asbestos Lurks in Many Homes*, San Francisco Chronicle, July 14, 2001, at WB-7 [Exhibit 82]. *See also* Corrected Zonolite Attic Insulation Claimants' Memorandum in Support of Motion for Partial Summary Judgment, Doc. No. 4028 at 12-13, n. 36 (ZAI was purchased and installed in as many as 4,486,722 homes in the United States between 1969 and 1984).

[15] On July 7, 2003, Grace filed a Motion to Consolidate the Actions of ZAI Claimants Pursuant to Rule 42, Doc. No. 4010, for the purpose of determining the single common question of whether ZAI creates an unreasonable risk of harm, in accordance with the plan for the ZAI Science Trial set forth by the court. Claimants did not oppose consolidation in their Response to Debtors' Motion to Consolidate the Actions of ZAI Claimants Pursuant to Rule 42, Doc. No. 4203 (filed on August 8, 2003).

summary judgment (the ZAI Science Trial) was held on October 18, 2004.[16] Additional efforts to settle were unavailing. The matters are now ripe for decision.

Claimants filed a Motion for Partial Summary Judgment (the docket entry reads "Motion for Summary Judgment") requesting that the court issue an order pursuant to Fed.R.Civ.P. 56(d) specifying that there is no material issue of fact but that ZAI is contaminated with asbestos and ZAI releases asbestos fibers into the air when disturbed during foreseeable homeowner activities in the attic.[17] Claimants also filed a Motion for Summary Judgment requesting judgment as a matter of law that "ZAI can contaminate homes/pose an unreasonable danger upon disturbance" and "ZAI Claimants have viable claims under tort and/or other legal theories in this bankruptcy

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[16] The parties filed various motions regarding the admissibility of evidence for the ZAI Science Trial. *See* Debtors' Motion *In Limine* to Exclude Evidence of Any Alleged Damages From the ZAI Science Trial, Doc. No. 4012; Response of ZAI Claimants to Debtors' Motion *In Limine* to Exclude Evidence of Any Alleged Damages from the ZAI Science Trial, Doc. No. 4202; Reply in Support of Debtors' Motion *In Limine* to Exclude Evidence of Any Alleged Damages from the ZAI Science Trial, Doc. No. 4297; Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments, Doc. No. 4022; United States Statement Regarding Asbestos Analysis Issues in W.R. Grace's Motion for Summary Judgment, Doc. No. 4173; Opposition of W.R. Grace & Co. to Claimants' Motion to Exclude Dr. R.J. Lee's Opinion On Cleavage Fragments, Doc. No. 4206; Claimants' Reply to W.R. Grace's Response to Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments, (the docket entry reads "Brief (Reply) in Support of Motion to Exclude Dr. R. J. Lee's Opinion on Cleavage Fragments"), Doc. No. 4293; Reply of W.R. Grace & Co. to United States' Statement Regarding Asbestos Analysis Issues in W.R. Grace's Motion for Summary Judgment and Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments, Doc. No. 4296.

[17] Doc. No. 4007 (filed on 7/2/2003). Claimants entered a corrected brief at Doc. No. 4028, entitled Corrected Zonolite Attic Insulation Claimants' Memorandum in Support of Motion for Partial Summary Judgment, Re: W.R. Grace's Consumer Protection Liability (Replacing Attachment Nos. 1& 2 to [Doc. No.] 4007) on July 8, 2003, which was docketed as "Memorandum of Law in Support of Motion for Summary Judgment." *See also* Grace's Memorandum in Opposition to ZAI Claimants' Motion for Partial Summary Judgment Regarding Consumer Protection Act Claims, Doc. No. 4175; Zonolite Attic Insulation Claimants' Reply to Grace's Memorandum in Opposition to ZAI Claimants' Motion for Partial Summary Judgment Re: W.R. Grace's Consumer Protection Liability, Doc. No. 4291.

proceeding."[18] Claimants proposed that a claims fund be established to compensate presently identified claimants and that provisions should be made for not-yet-identified claimants as homeowners encounter ZAI during foreseeable disturbance activities. Although Claimants have asked for partial summary judgment pursuant to Fed.R.Civ.P. 56(d), that rule provides that "[i]f . . . judgment is not rendered upon the whole case . . . the court . . . shall if practicable ascertain what material facts exist without substantial controversy . . . [and] shall thereupon make an order specifying the facts that appear without substantial controversy. . . ." Accordingly, we will deny, without prejudice, the motion for partial summary judgment and will enter an order finding that there is no material issue of fact but that ZAI is contaminated with asbestos and ZAI releases asbestos fibers into the air when disturbed during foreseeable homeowner activities.

Grace also filed a Motion for Summary Judgment on the threshold issue of whether ZAI creates an unreasonable risk of harm, contending that there is insufficient evidence that ZAI poses such a risk.[19] Grace requested that, in accordance with this finding, the court dismiss the property damage claims of the ZAI Claimants.

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[18] ZAI Claimants' Memorandum in Support of . . . Motion for Summary Judgment [Re: issues that: (1) ZAI can Contaminate Homes/Pose an Unreasonable Danger Upon Disturbance; and (2) ZAI Claimants Have Viable Claims Under Tort and/or Other Legal Theories], Doc. No. 4018 at 37. *See also* Opposition of W.R. Grace & Co. to Claimants' Motion for Summary Judgment, Doc. No. 4205; Claimants' Reply to W.R. Grace's Response to Claimants' Motion for Summary Judgment, Doc. No. 4294.

[19] W.R Grace & Co.'s Motion for Summary Judgment, Doc. No. 4009. *See also* United States' Statement Regarding Asbestos Analysis Issues in W.R. Grace's Motion for Summary Judgment and Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments, Doc. No. 4173; Claimants' Response to W.R. Grace's Motion for Summary Judgment, Doc. No. 4204; Reply of W.R. Grace & Co. to United States Statement Regarding Asbestos Analysis Issues in W.R. Grace's Motion for Summary Judgment and Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage, Doc. No. 4296; Reply of W.R. Grace& Co. to ZAI Claimants' Response to Grace's Motion for Summary Judgment, Doc. No. 4298.

The only issue before the court is the nature of the product - specifically, whether the physical characteristics, use, and location of ZAI in homes creates an unreasonable risk of harm. This determination is a critical factor in assessing the viability of the property damage claims and the practicability of the proposed procedures for administration of the claims process. All three motions at bench are based on this premise and we will discuss collectively unless otherwise indicated in the text. In addressing the threshold question of unreasonable risk, Claimants argued that a finding that ZAI was contaminated with asbestos and released fibers during foreseeable homeowner activities is enough evidence to satisfy state consumer protection statutes and to support a finding of unreasonable risk. Grace argued that contamination and release alone are not enough, but that the fiber release from ZAI must be at levels which pose unreasonable risk of harm to human health. We agree with Debtors' argument as will be explained below.

BACKGROUND

Zonolite Attic Insulation ("ZAI") was sold by Grace as a supplemental insulation for unfinished attics of existing homes. The Zonolite Company, which was acquired by Grace in 1963, began sales of the product as early as the 1920s[20] and Grace ceased production and sale of ZAI in 1984.[21] ZAI is comprised of an expanded mineral known as vermiculite. The vermiculite

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[20] The Zonolite Company, Libby, MT, *Zonolite, As A Heat Loss Insulator in Buildings: Warmer in Winter - Cooler in Summer* (sales pamphlet), (circa 1928), cited in William M. Ewing, *"Zonolite Attic Insulation Report"* (Mar. 19, 2003), Doc. No. 4019 at 6.

[21] "We have reached the point where the returns from [ZAI] are less than the investment required to keep the product going, and we must regretfully announce that Zonolite Attic Insulation will not be available for sale in the 1984 selling season." *Grace Memo to Building*

(continued...)

in ZAI was mined from Zonolite Mountain, located ten miles from Libby, Montana. Vermiculite is not asbestos; however, one of the tramp[22] minerals contained in the vermiculite ore mined at Libby was asbestos. After mining this crude vermiculite ore and prior to furnace expansion, Grace milled the ore to remove impurities such as asbestos. Grace contends that the percentage of asbestos remaining in ZAI is generally less than one percent. It is the asbestos content which is the catalyst for the property damage claims involving ZAI.[23]

The Environmental Protection Agency ("EPA") and the Agency for Toxic Substances and Disease Registry ("ATSDR") acknowledge that the scientific studies thus far fail to establish a scientific basis to show a relationship between ZAI and health risks [24] but recommend that the public take precautions until more is known.[25] They recommend that homeowners leave VAI[26]

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[21](...continued)
Products Sales Force (Jan. 1984). Doc. No. 4009, at 3 and Doc. No. 4018, Exh. 21.

[22] A tramp mineral is an unwelcome impurity in another material.

[23] Claimants contend that the asbestos content of ZAI may reach slightly above one percent. Doc. No. 4018, Memorandum, at 10. Under EPA standards, materials containing less than one percent asbestos are not considered Asbestos Containing Material ("ACM"). EPA, *"National Emission Standards for Hazardous Air Pollutants,"* 40 C.F.R. 61 (April 5, 1984) and EPA, *"Managing asbestos in place: A building owner's guide to operations and maintenance programs for asbestos-containing materials (Green Book),"* EPA 20T-2003 (1990).

[24] Versar, Inc. *Final Draft Pilot Study to Estimate Asbestos Exposure from Vermiculite Attic Insulation*, (May 21, 2003 EPA). Doc. No. 4306, Exh. 5.

[25] EPA, *Background: EPA's Pilot Study to Estimate Asbestos Exposures from Vermiculite Attic Insulation* (May 21, 2003) ("Additional studies are needed to better understand any potential risks from asbestos contaminated vermiculite insulation . . ."). Doc. No. 4306, Exh. 4.

[26] *See* note 4, *supra*, regarding "VAI". Multiple brands of vermiculite attic insulation, one of which was ZAI, were included in the VAI studies and investigations mentioned herein.

undisturbed and, if homeowners choose to remove it, that they hire professionals.[27] These recommendations have been consistent for over 20 years. "People who have homes with vermiculite insulation should become informed, not alarmed," said Stephen L. Johnson, EPA's Assistant Administrator for the Office of Prevention, Pesticides and Toxic Substances ("OPPT"), in an OPPT study which refused to declare a public health emergency in Libby, Montana, despite the argument that ZAI has the potential to create additional asbestos exposure risks to the community.[28] "If our message of 20+ years is adhered to, the risk is minimal."[29] The EPA has been reluctant to make any changes to its longstanding guidance to homeowners.[30]

We note that the EPA's advice to homeowners is not a codified regulation; it is an EPA advisory issued in connection with a "National Consumer Awareness Program" on VAI.[31] Even if it were a regulation, it would not necessarily establish a standard from which to determine liability for property damage. As the court stated in *In re Agent Orange Product Liability Litig.*,

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[27] EPA and ATSDR, *Current Best Practices for Vermiculite Attic Insulation* (May 2003). Doc. No. 4013, Exh. J.

[28] EPA, *"National Consumer Awareness Campaign Launched on Vermiculite Insulation Used in Some Home Attics," in EPA Headquarters Press Release*. Doc. No. 4013, Exh. I.

[29] OPPT, *OPPT Comments on Action Memorandum Amendment Removal Action at the Libby Asbestos Site (E-mailed to OPPT staff on 02-20-02)* (Feb. 22, 2002). Doc. No. 4013, Exh. I.

[30] *Letters from Christine Todd Whitman, EPA Administrator, to Senators Max Baucus and Patty Murray, Responses* (April 4, 2003, and April 18, 2003)("EPA has not changed its longstanding guidance to homeowners [about ZAI] because we do not have the scientific basis to do so at this time. . . [S]o much about the risks posed from asbestos-containing vermiculite attic insulation remains unknown. . ."). Doc. No. 4013, Exh. K, at 1,2.

[31] *See* notes 27 and 28, *supra.*

597 F.Supp. 740 (E.D.N.Y. 1984), *aff'd*, 818 F.2d 145 (2d Cir. 1987), *cert. denied sub nom. Pinkney v. Dow Chemical Co.*, 484 U.S. 1004 (1988):

> The distinction between avoidance of risk through regulation and compensation for injuries after the fact is a fundamental one. In the former, risk assessments may lead to control of a toxic substance even though the probability of harm to any individual is small and the studies necessary to assess the risk are incomplete; society as a whole is willing to pay the price as a matter of policy. In the latter, a far higher probability (greater than 50%) is required since the law believes it unfair to require an individual to pay for another's tragedy unless it is shown that it is more likely than not that he caused it.

597 F.Supp. at 781. The EPA has adopted a "just-in-case" policy which does not place a significant burden or inconvenience on society.[32] In this case, Grace's expert, Dr. Morton Corn, explained that, while he considers it appropriate to recommend specialists for complete removal, he would not be concerned if homeowners were to remove ZAI on their own.[33]

Although much is still contested regarding ZAI, the parties do not dispute the several significant facts that are material to the matters at bench. Both the ZAI Claimants and Grace acknowledge that ZAI is contaminated with asbestos and releases fibers when disturbed.[34] The

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[32] *See* notes 27 and 28, *supra*.

[33] ". . . I would not be concerned with once in a lifetime exposure without protection. Q: Okay. So you wouldn't be concerned if a homeowner went up there and vacuumed the material out himself or herself without a respirator at all. A: That's correct, for once – for that kind of frequency of occurrence. Q: Okay. A. I think that's the difference between the tenor of plaintiffs' experts in this litigation versus the position I'm taking, and plaintiffs have shifted in their experts. They're tuned now to avoidance of all exposure. Any exposure is hazardous, and I've addressed that issue in the supplement of my report. I am not taking the position that any exposure is hazardous, I don't believe it is. And I believe that the risk, which I term hypothetical risk, from a once in a lifetime removal is very low, if it exists at all." Deposition of Morton Corn (May 29, 2003), Doc. No. 4018, Attachment 3, at 93-97.

[34] Doc. No. 4028, at 3; Doc. No. 4011, Exh. F, at 18; Doc. No. 4019, Exh. 43, at 24.

expert reports from both the ZAI Claimants and Grace include this assumption.[35] Additionally, because asbestos must be inhaled to pose a risk, the parties agree that ZAI does not pose a risk to health if left undisturbed because the fibers never become airborne.[36] What remains at issue are the conclusions the parties draw from these facts regarding the level and occurrence of homeowner exposure to asbestos released by ZAI and ultimately what risk this exposure may pose.

ANALYSIS

A. *Applicable Legal Standards*

1. *Admissibility of Scientific Evidence*

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[35] Grace's expert, Dr. Morton Corn, stated as follows in his Report: "Summary and Conclusion. Review of available investigations of potential homeowner exposure to ZAI, as well as review of an EPA Region VIII risk assessment, associated critiques of this assessment, and other relevant documents, lead to the following conclusions: Zonolite Attic Insulation (ZAI) contains approximately 1% or less asbestos by weight. The bulk material can release airborne particles and fibers when poured or otherwise intruded upon with energy. A variety of investigations have been undertaken to measure the concentrations of asbestos-in-air when ZAI does release fibers to the air. . . The measurements are consistent in that airborne asbestos concentrations during disturbance are measurable in the breathing zones of those in the immediate vicinity of the disturbance, but are not elevated throughout the entire home. . ." Doc. No. 4011, Exh F, at 18.

Claimants' experts, Richard Hatfield and Dr. William E. Longo, stated: "Based on our evaluations of ZAI and the results of the simulation testing, it is our opinion that this material will release asbestos fibers into the air when the material is disturbed during ordinary and foreseeable disturbance activities." Doc. No. 4019, Exh. 43, at 24. Claimants' expert, William Ewing, stated: "The data that I have reviewed indicates that ZAI in some homes has tested at more than 1% asbestos ." Doc. No. 4019, Exh. 28, at 7.

[36] Claimants concede this point in their Memorandum in Support of the ZAI Claimants' Motion for Summary Judgment. Doc. No. 4018, at 17. Ewing Deposition, Doc. No. 4011, Exh. C, at 58.

The scientific evidence introduced during the Science Trial is subject to Rule 702 of the Federal Rules of Evidence and the corresponding interpretation provided by the United States Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals,* 509 U.S. 579 (1993). Rule 702 provides that:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

The first of the two requirements contained in Rule 702 addresses the qualifications necessary for a witness to be considered an "expert." The Court of Appeals for the Third Circuit has interpreted this requirement liberally, accepting generalized qualifications and avoiding overly rigorous or formal standards. *See Elcock v. Kmart Corp.,* 233 F.3d 734, 742-44 (3d Cir. 2000); *Hammond v. International Harvester Co.,* 691 F.2d 646, 652-53 (3d Cir. 1982); *Knight v. Otis Elevator Co.,* 596 F.2d 84, 87-77 (3d Cir. 1979). In the present case, expertise is not an issue. The experts on both sides are qualified.

The second requirement contained in Rule 702 is that the qualified expert must testify to "scientific, technical or other specialized knowledge [that] will assist the trier of fact." Fed.R.Evid. 702. This element was addressed by the Supreme Court in *Daubert* which held that expert opinion testimony is admissible under Rule 702 of the Federal Rules of Evidence only if "the reasoning or methodology underlying the testimony is scientifically valid and . . . that reasoning or methodology properly can be applied to the facts in issue." *Daubert*, *supra*, 509 U.S. at 592-93. The *Daubert* court provided a non-exclusive list of four factors to guide the first part of this inquiry, *i.e.*, whether the scientific testimony or evidence is scientifically valid. These factors were subsequently expanded to eight by the Court of Appeals for the Third Circuit:

> (1) whether a method consists of a testable hypothesis; (2) whether the method has been subject to peer review; (3) the known potential rate of error; (4) the existence and maintenance of standards controlling the technique's operation; (5) the method is generally accepted; (6) the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology and (8) the non-judicial uses to which the method has been put.

In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 742 n.8 (3d Cir. 1994), *cert. denied,* 513 U.S. 1190 (1995) *("Paoli II"). See also Elcock v. Kmart Corp.,* 233 F.3d 734, 745 (3d Cir. 2000). "The test of reliability is 'flexible,' and *Daubert's* list of specific factors neither necessarily nor exclusively applies to all experts or in every case." *Kumho Tire Co., Ltd. v. Carmichael,* 526 U.S. 137, 142 (1999).

> *Daubert's* requirement that the expert testify to scientific knowledge – conclusions supported by good grounds for each step in the analysis – means that any step that renders the analysis unreliable under the *Daubert* factors renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology.

Paoli II, 35 F.3d at 745.

The second part of the *Daubert* inquiry, whether the reasoning or methodology can be applied to the facts, was first described as a question of "fit" by Judge Becker in *United States v. Downing,* 753 F.2d 1224, 1242 (3d Cir. 1985). "'Fit' is not always obvious, and scientific validity for one purpose is not always scientific validity for other, unrelated purposes . . . Rule 702's 'helpfulness' standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility." *Daubert, supra,* 509 U.S. at 591. "The proponent of an expert's opinion has the burden of establishing both branches of this test by a preponderance of the evidence." *In re Armstrong World Industries, Inc.*, 285 B.R. 864, 870 (Bankr. D. Del. 2002), citing *Paoli II,* 35 F.3d at 744. But "the focus . . . must be solely on principles and methodology,

not on the conclusions that they generate." *Daubert*, 509 U.S. at 595, quoted in *Paoli II*, 35 F.3d at 744.

As discussed below, the application of the *Daubert* standards to the evidence submitted in the Science Trial reveals that, in this proceeding, "fit" is more of an issue than reliability.

2. *Summary Judgment Standard*

Pursuant to Fed.R.Civ.P. 56(c), summary judgment is appropriate when there are no genuine issues of material fact and the moving party is entitled to judgment as a matter of law. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986). In particular, summary judgment for defendant is warranted where plaintiffs cannot establish an essential element of their claim. *Id.* at 322; *Schoonejongen v. Curtiss-Wright Corp.*, 143 F.3d 120, 130 (3d Cir. 1998). The moving party bears the initial responsibility of identifying an absence of admissible evidence to support an essential element in a non-moving party's case. *Celotex Corp.*, 477 U.S. at 325.

Once the moving party has shown the absence of a genuine issue of material fact as to an essential element of the non-movant's case, the burden shifts to the non-moving party to set forth affirmative evidence and specific facts showing that there is a genuine issue for trial. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 249-50 (1986). *See also Aronow Roofing Co. v. Gilbane Bldg. Co.*, 902 F.2d 1127,1128 (3d Cir. 1990) ("Summary judgment will be granted where the non-moving party fails to 'establish the existence' of an element essential to the case").

The non-moving party must do more than express doubt as to the truth of the moving party's factual submissions, but must show "concrete evidence from which a reasonable jury could return a verdict in his favor." *Anderson*, *supra*, 477 U.S. at 256. This evidence must rise

above casting "metaphysical doubt" as to a material issue of fact. *Matsushita Elec. Indus. Co. Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 586 (1986). *See also Schoch v. First Fidelity Bancorporation*, 912 F.2d 654, 657 (3d Cir. 1990)(neither unsupported claims in pleadings nor conclusory allegations in affidavits establish genuine issues of material fact).

Alleged scientific evidence that does not meet the test of reliability set forth in *Daubert* cannot be utilized to artificially create an issue of fact for trial and, thus, cannot be used to defeat a motion for summary judgment. *See Kumho Tire, supra,* 526 U.S. at 148.

B. *ZAI Claimants' Request for Declaration of Two Facts - Contamination and Release on Disturbance*

Claimants requested, in their Corrected Memorandum in Support of Motion for Partial Summary Judgment Re: W.R. Grace's Consumer Protection Liability, that the court issue an order specifying that there is no material issue of fact but that ZAI is contaminated with asbestos and ZAI releases asbestos fibers into the air when disturbed during foreseeable homeowner activities.[37] Because the asbestos contamination of ZAI and the potential for the release of asbestos fibers when ZAI is agitated are undisputed by Grace, the court will make the findings requested in Claimants' motion for partial summary judgment. Grace objected to this motion, arguing that the requested relief is meaningless, that establishing contamination and release alone does not address the question of unreasonable risk.[38] We agree that establishing

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[37] Doc. No. 4028. This is docketed as "Memorandum of Law in Support of Motion for Summary Judgment."

[38] Doc. No. 4175, at 2.

contamination and release is not all that Claimants must prove. However, contamination and release are facts essential to a determination of unreasonable risk. Claimants ultimately seek this determination to support the liability of Grace under state consumer protection statutes. Establishing contamination and release alone (while not meaningless) is not enough; Claimants must still establish unreasonable risk of harm to support consumer protection claims.

Although the motion itself addresses only the lack of dispute of two facts, *i.e.* the contamination and release on disturbance, in their Corrected Memorandum in Support of their Motion for Partial Summary Judgment, Claimants also argue that Grace has substantial liability under state consumer protection statutes[39] based on the alleged deceptive marketing of a product it knew was dangerous because it was contaminated with asbestos.[40] However, the question before us is whether ZAI poses an unreasonable risk of harm. Under a typical consumer protection claim, as illustrated by Washington's Consumer Protection Act (CPA), Rev. Code Wash. (RCW) 19.86.010 to 19.86.920, claimants must prove: "(1) an unfair or deceptive act or practice, (2) in the conduct of trade or commerce, (3) that has an impact on the public interest, (4) injury to the plaintiff in their business or property, and (5) a causal link between the unfair or deceptive act and the injury suffered." *Trask v. Butler*, 872 P.2d 1080, 1086 (Wash. 1994), citing *Mason v. Mortgage America, Inc.*, 792 P.2d 142 (Wash. 1990). Claimants have not produced any evidence of a causal link between any deceptive act, assuming there was one, and any injury. As will be seen, the two facts agreed on [that ZAI is contaminated and releases fibers

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[39] In addition to Washington's statute, Claimants provided an analysis of similar consumer protection statutes in Massachusetts, California, Montana, and Minnesota. *Claimant State CPA Analysis*, Doc. No. 4028, Exh. C.

[40] Doc. No. 4028.

when disturbed] have not been shown to have caused or to be more likely than not to cause an injury. Therefore, Claimants have not met their burden of proof to a preponderance of the evidence that there is any unreasonable risk of harm from ZAI. The following sections will discuss the particular assertions advocated in this proceeding.

C. *Unreasonable Risk of Harm*

1. *Market Place Aversion: Risk of Harm to Property Value*

Claimants propose that the court's threshold question of whether ZAI creates an unreasonable risk of harm can be answered through a showing of unreasonable risk of harm to the property. They argue that the market place aversion associated with asbestos creates an unreasonable risk of harm to the value of the property. To substantiate this claim, they presented expert real estate valuation testimony from Dr. John A. Kilpatrick,[41] who opined that asbestos-contaminated ZAI poses unreasonable risk to property value through marketplace aversion. Grace filed a motion to exclude this evidence arguing that it was not relevant to the threshold question of unreasonable risk.[42] This court denied the motion and permitted the evidence to be introduced during the Science Trial hearings. We note that diminution in value is an aspect of damages, not of risk. Nonetheless, even under Claimants' construction of the issue, the risk of

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[41] Expert Report of John Kilpatrick, Doc. No. 4291, Attachment F; Kilpatrick Deposition, Doc. No. 4202, Exh. D at 10, 37. Claimants retained Dr. John Kilpatrick to assess whether ZAI posed an unreasonable risk of harm to real property values. Dr. Kilpatrick is a real estate economist and valuation expert, holding a Ph.D. in real estate finance from the University of South Carolina. He is the managing partner of Mundy Associates, LLC, which specializes in complex real estate valuation problems.

[42] Doc. No. 4012.

harm to the value of the property is still inextricably tied to the risk of harm to human health. Ultimately, any marketplace aversion stems from fears over hazards to human health. Without any showing of unreasonable risk of harm to human health, the claim most closely resembles a stigma-based property damage claim. Courts, including this court in this case, have been reluctant to accept stigma claims because they are too remote and speculative.[43] Assessing unreasonable risk through market place aversion alone, would make public opinion, not science, the determining factor. As will be discussed below, there has not been a sufficient showing of unreasonable risk to human health. Thus, we find that the testimony of Dr. Kilpatrick does not fit the facts of the case at hand. As a result, we give no weight to his testimony on this issue.

2. *No Safe Threshold Argument*

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[43] The U.S. District Court for the Western District of New York decided that with no actual physical damage to a plaintiff's property, stigma damages alone were too remote and speculative to be recoverable. *Mehlenbacher v. Akzo Nobel Salt, Inc.*, 71 F.Supp.2d 179, 193 (W.D.N.Y. 1999), *vacated in part on other grounds,* 216 F.3d 291 (2d Cir. 2000). The Court of Appeals of Georgia in *Hammond v. City of Warner Robbins*, 482 S.E.2d 422, 428 (Ga. App. 1997), similarly found that "stigma to realty, in and of itself, is too remote and speculative to be a damage and is of first impression." The Supreme Court of Ohio and the Court of Appeals of Ohio both held that "stigma" damages are not recoverable as property damage in the State of Ohio. *Chance v. BP Chemicals, Inc.*, 670 N.E.2d 985, 989 (Ohio 1996), and *Ramirez v. AKZO Nobel Coatings*, 791 N.E.2d 1031, 1032-33 (Ohio App. 5 Dist., 2003)("stigma damages cannot be recovered unless there is actual, physical damage to . . . property"). In *Chance* the Supreme Court of Ohio found that the trial court had not abused its discretion when it denied the plaintiffs the opportunity to present evidence of speculative stigma damages. 670 N.E.2d at 993. In *Leaf River Forest Products, Inc. v. Ferguson*, 662 So.2d 648 (Miss. 1995), plaintiffs filed a property damage claim based on the release of dioxin into the Leaf and Pascagoula Rivers. The Supreme Court of Mississippi in *Leaf River* held that "mere stigma, supported by tests showing dioxin contamination no closer than eighty river miles north of the alleged damage, is not sufficient evidence of compensable injury." *Id.* at 664. This court has joined its sister courts in denying stigma claims. *In re W.R. Grace & Co.*, 346 B.R. 672 (Bankr. D. Del. 2006).

In their Motion for Summary Judgment, Claimants argue that any exposure to asbestos fibers is an unreasonable risk. Therefore, Claimants assert, because ZAI contains asbestos and releases fibers during foreseeable homeowner activities,[44] there are no issues of material fact remaining. "No science trial is necessary to debate what has already been conceded by Grace's experts and universally recognized by everyone else."[45] They rely primarily on *Greenville v. W.R. Grace & Co.*, 827 F.2d 975 (4th Cir. 1987), *School District of Independence, Mo., No. 30 v. U.S. Gypsum Co.*, 750 S.W.2d 442 (Mo.App. W.D. 1988), and *3250 Wilshire Blvd. Bldg. v. W.R. Grace & Co.*, 1989 WL 260222 at *4 (No. CV 87-6048-WMB, C.D. Cal. July 24, 1989), to apply this "no safe threshold" concept to property damage. The *Greenville* court stated:

> In *Watermark*, we indicated that a manufacturer whose product creates an unreasonable risk of harm may fairly be held liable when the product causes personal injury. We think that the South Carolina courts would be willing to extend tort liability to the manufacturer whose product threatens a substantial and unreasonable risk of harm by releasing toxic substances into the environment, thereby causing damage to the property owner who has installed the harmful product in his building. . . . Such diseases may not develop until decades after exposure to asbestos. We think that a plaintiff such as Greenville should not be required to wait until asbestos-related diseases manifest themselves before maintaining an action for negligence against a manufacturer whose product threatens a substantial and unreasonable risk of harm by releasing toxic substances into the environment.

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[44] Grace has conceded that ZAI contains asbestos and may release fibers when disturbed. Doc. No. 4009, Brief of W. R. Grace & Co. in Support of Motion for Summary Judgment, at 3. However, there remains a dispute over the percentage of asbestos contained in ZAI and the level of fiber release. *See* Doc. No. 4018, Memorandum in Support of ZAI Claimants' Motion for Summary Judgment, at 10-14.

[45] Doc. No. 4018 at 3.

Greenville, 827 F.2d at 978.[46] Claimants argue that the substantial and unreasonable risk of harm is the release of toxic substances into the environment alone, regardless of the levels released and thus that the ZAI product is unsafe.[47] Grace, also citing *Greenville*, contends that *Greenville*, and other cases cited herein, do not hold that a plaintiff may recover damages without proof that the product creates an unreasonable risk of harm.[48]

Grace relies on *National Bank of Commerce v. Associated Milk Producers, Inc.*, 22 F.Supp.2d 942 (E.D.Ark. 1998), *aff'd*, 191 F.3d 858 (8th Cir. 1999), and *Sutera v. Perrier Group of America, Inc.*, 986 F.Supp. 655 (D.Mass. 1997), to show that courts have rejected the "no threshold" argument. In *National Bank*, the court rejected plaintiff's expert testimony because the expert presented no scientific knowledge or information as to the level of the toxin that would subject a person who breathes it to an appreciable risk of harm, 22 F.Supp.2d at 946, and concluded that establishing that the risk of causation "is not zero" falls woefully short of the degree of proof required by *Daubert* and its progeny. *Id.* at 961. In *Sutera*, the district court held that the EPA goal of 0 ppb[49] for benzene in drinking water, a "no threshold" regulatory

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[46] *Greenville* focuses on the fact that it can take years for asbestos related diseases to develop. ZAI has been in use since the 1920s and it has been over two decades since the last sale of ZAI. *See* notes 20 and 21 and accompanying test, *supra*. The 20 to 80 years that have passed while ZAI has insulated attics is within the range of time for asbestos related diseases to manifest themselves as a result of exposure to ZAI. The latency period for asbestos related diseases ranges from 10 to 45 years. U.S. Environmental Protection Agency, *EPA Publication on Asbestos* (2005), http://www.epa.gov/oppt/asbestos/pubs/asbe.pdf.

[47] Doc. Nos. 4018, 4204, 4291, and 4294.

[48] Doc. No. 4205 at 6, n.4.

[49] Parts per billion ("ppb") denotes one particle of a given substance for every 999,999,999 other particles. This is roughly equivalent to one drop of ink in an Olympic-sized swimming pool, or one second every 320 centuries.

standard, was not an appropriate measure of causation, without further evidence such as epidemiological studies, risk assessment, and/or other reliable methodologies used to demonstrate causation.

Grace also cites the fact that the EPA has set standards for acceptable risk[50] which is in direct opposition to the concept of "no threshold."[51] The use of the no safe level or linear "no threshold" model for showing unreasonable risk "flies in the face of the toxicological law of dose-response, that is, that 'the dose makes the poison,' which refers to the general tendency for a greater dose of a toxin to cause greater severity of responses in individuals, as well as greater frequency of response in populations." Federal Judicial Center, *Reference Manual on Scientific Evidence* 475 (2d ed. 2000)(hereafter "*Reference Manual on Scientific Evidence*"). Further, both Grace's experts and Claimants' experts have acknowledged that some levels of exposure pose no risk. In fact, Dr. Henry Anderson, Claimants' medical expert, testified that individuals in urban areas live with low levels of asbestos exposure their entire lives without risking their health and that there are levels of exposure to asbestos in ZAI that are not medically significant.[52] ZAI, the product itself, left in place in the attics that it has insulated for up to eight decades, has not been shown to be unsafe on this record.

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[50] *See* 40 C.F.R. 300.430(e)(2)(i)(A)(2). For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper count lifetime cancer risk to an individual of between 10^{-4} [1 in 10,000 or 0.0001] and 10^{-6} [1 in 1,000,000 or .000001] using information on the relationship between dose and response.

[51] The court in *Celotex v. A.I.U. Insurance. Co., et. al (In re Celotex)*, 196 B.R. 973, 981-84 (Bankr. M.D. Fla. 1996), explained that as the understanding of asbestos increased, the EPA backed away from "no threshold" theories and the tear-it-all-out approach.

[52] Henry Anderson Deposition, Doc. No. 4013, Exh. T, at 37.

Even if the "no threshold concept" was applicable and satisfied *Daubert*'s requirements for admissibility of scientific evidence, the cases cited by Claimants are not apropos. In *Greenville,* 827 F.2d 975, and *Wilshire*, 1989 WL 260222, *supra*, contamination and release were enough to trigger property damage liability. However, the cases are distinguishable. In *Greenville*, the contamination was in living and working areas.

> The evidence further showed that the asbestos material in the City Hall was falling off the beams in some areas and was laying in pieces on top of ceiling tiles. Greenville's experts found invisible asbestos fibers on every building surface tested in amounts of up to millions of fibers per square foot of surface area. Asbestos had contaminated ceiling tiles and carpets.

City of Greenville v. W.R. Grace & Co., 640 F.Supp. 559, 565 (D.S.C. 1986). Asbestos fibers had been released into ceiling tiles, ventilation and elevator shafts, carpets and computer equipment. *City of Greenville v. W.R. Grace & Co.*, 827 F.2d 975, 976 (4th Cir. 1987). Similarly, the court in *Wilshire* explained that to sustain a claim for damages due to asbestos contamination, plaintiffs were required to show that asbestos fibers were released into "other parts of the structure [building]" beyond the areas where asbestos-containing fireproof material had been installed. *Wilshire*, 1989 WL 260222 at *8.

Claimants also look to *Perlmutter v. United States Gypsum Co.*, 4 F.3d 864 (10th Cir. 1993), and a list of "representative cases holding that property contamination is established by proving the release of asbestos fibers or other toxic substances"[53] to support the application of the "no threshold" theory. However, in each of the "representative cases," the release of asbestos or other toxins was in living and work areas, not confined to an attic or similar location

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[53] Doc. No. 4215, Exh. 6.

as is ZAI. The location of contamination and other relevant characteristics of "representative cases" cited by Claimants are listed below:

> *Commonwealth v. United States Mineral Products Co.*, 809 A.2d 1000, 1012 (Pa. Cmwlth. 2002). PCBs were first discovered in the elevator and later found "on every floor of the building and . . . there were also 'hot spots,' which contained a heavier concentration of PCBs."
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> *80 South Eighth Street Limited Partnership v. Cary-Canada, Inc.*, 486 N.W.2d 393, 395 (Minn. 1992). Product "will release substantial numbers of asbestos fibers into all parts of the IDS Center."
>
> *Town of Hooksett School District v. W.R. Grace & Co.*, 617 F.Supp. 126, 128 (D.N.H. 1984). The asbestos product released "fibers contaminating its air, walls, floors, carpeting and upholstery as well as students and school personnel."
>
> *Transwestern Pipeline Co. v. Monsanto Co.*, 46 Cal. App. 4th 502, 53 Cal. Rptr.2d 887 (Cal. App. 1996). Court awarded damages for costs associated with removal of PCB from residential gas lines in California.
>
> *U.S. Gypsum v. Admiral Insurance. Co.*,(Ill. App. Court. 1994). Acoustical finishing plasters in schools: tiles fell in rooms and hallways, names carved in tiles, etc.
>
> *Lac D'Amiante du Quebec*, 613 F.Supp. 1549 (D.N.J. 1985). This company mined and sold asbestos for use in other companies' products and was suing insurance companies.
>
> *City of Manchester v. National Gypsum Co.*, 637 F.Supp. 646, 651 (D.R.I. 1986). "[T]he asbestos has purportedly contaminated the ceilings, walls, floors, furniture, drapes, and air quality of the buildings."
>
> *American Alliance Insurance Company v. Jencraft Corp.* 21 F.Supp.2d 485 (D.N.J. 1998). Lead-stabilized vinyl mini-blinds released "hazardous lead dust into surrounding environs."
>
> *Perlmutter v. United States Gypsum Co.*, 4 F.3d 864 (10th Cir. 1993). Asbestos fiber release from an acoustical plaster product was found "on top of a display case . . . near an information booth . . . in an area near certain lighting fixtures and on carpeting at the entry way to one of the stores."

In the case before us, there is no evidence that asbestos is released into living or working areas absent large scale renovation or demolition. To the contrary, the evidence established just the opposite: even upon disturbance for foreseeable homeowner activities, asbestos concentrations are not elevated throughout the house.

Claimants' expert, Mr. William M. Ewing,[54] explained that the mere presence of ZAI in an attic does not release asbestos fibers into the air of either the attic or the living areas of the home.[55] Dr. Morton Corn, Grace's expert, agreed in his Expert Witness Report that "airborne asbestos concentrations during disturbance are measurable in the breathing zones of those in the immediate vicinity of the disturbance, but not elevated throughout the entire home."[56] Ambient air tests were conducted in twelve homes by Claimants and eighteen air sample stations running in the living areas of the homes tested produced only one single fiber when analyzed using EPA's AHERA protocol, 40 C.F.R., Part 763, Appendix A to Subpart E.[57]

Thus we are faced with an assertion that the mere presence of ZAI in attics poses an unreasonable risk of harm but with no evidence to support that contention. The court in *Wilshire* held that "plaintiffs may not recover damages under their theories that the mere presence of ACFM[58] or the potential future risk of ACFM contamination constitutes actionable harm in tort."

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[54] Mr. Ewing, Certified Industrial Hygienist (CIH), is an expert at conducting studies involving asbestos in buildings. Over the past 20 years he has conducted numerous industrial hygiene, asbestos management, and indoor air quality studies. Doc. No. 4019, Exh. 28.

[55] Ewing Deposition, Doc. No. 4011, Exh. C at 58.

[56] Dr. Morton Corn Report, Doc. No. 4011, Exh. 2 at 18.

[57] Doc. No. 4013, Exh. G at 33 and Table 4.

[58] Asbestos containing fireproof material ("ACFM").

Wilshire, 1989 WL 260222 at *4. The Court of Appeals for the Tenth Circuit in *Perlmutter, supra,* 4 F.3d at 867, addressed the question of what evidence of contamination was necessary to maintain a property damage tort claim. The court highlighted the distinction between the evidence presented in *Adams-Arapahoe School Dist. No.28-J v. GAF Corp.*, 959 F.2d 868 (10th Cir. 1992), where the court found that the school district did not present sufficient evidence of contamination to justify sending the case to the jury and directed a verdict in favor of GAF Corp., and the evidence presented in *Perlmutter*. The court stated:

> The question we are presented under *Adams-Arapahoe* is whether the Developers have presented evidence sufficient to overcome USG's motion for directed verdict and post-trial motions on this claim. In so doing, we view the evidence in the light most favorable to the Developers and draw all inferences in the Developers' favor. . . We believe that the Developers have met this burden. . . . At trial, the Developers did more than present evidence that the Audicote plaster used in the Northglenn Mall contained asbestos or that the plaster could release asbestos dust if disturbed or allowed to flake or crumble. The Developers showed there were significant amounts of asbestos fibers . . .

in common areas of the mall frequented by shoppers. *Perlmutter,* 4 F.3d at 868. The claimants in *Adams-Arapahoe,* like those in the pending case, based their claims on the presence of asbestos contaminated materials in the building, the potential for fiber release, and the risks associated with asbestos. However, the evidence to support the claims is materially different. In *Pelmutter*, "significant amounts" of asbestos fibers were proven to exist in the mall. The evidence in the case before us shows an absence of asbestos fibers (either dormant or airborne) in the living areas of homes with ZAI attic insulation. Without evidence of the presence of asbestos fibers, the mere potential for contamination and release alone is insufficient, under *Adams-Arapahoe* and *Perlmutter*, to substantiate that there is any unreasonable risk of harm.

However, the matter does not end there. Attics are not completely isolated in all homes; some homeowners may enter the attic to make renovations such as adding ceiling light fixtures or fans. Others may use the attic for storage. Because of this potential for limited exposure, the court will examine the parties' submissions regarding epidemiological studies, risk assessment, and regulatory standards in order to determine whether ZAI poses an unreasonable risk due to foreseeable homeowner activities.

3. *Evidence Presented Concerning Whether ZAI Creates an Unreasonable Risk*

Grace retained four experts to evaluate the risks of exposure to ZAI when it is disturbed in an attic through cleaning, renovation, storage or removal activities: Dr. Elizabeth Anderson,[59] Dr. Morton Corn,[60] Dr. Richard J. Lee,[61] and Dr. William G. Hughson.[62] Grace also had Dr. Peter Lees[63] and Dr. Steve Mylnarek[64] perform a series of simulations in a home near Albany,

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[59] Dr. Anderson is a former director of the EPA's Risk Assessment Programs, past President of the Society of Risk Analysis and Editor of "Risk Analysis: An International Journal." Doc. No. 4011, Elizabeth Anderson Report, Appendix, Exh. E.

[60] Dr. Corn is a former Assistant Secretary of Labor in charge of OSHA, former Professor and Director of the John Hopkins University School of Public Health and author of over 100 articles, book chapters and books on industrial hygiene. Doc. No. 4011, Corn Report and Corn Supplemental Report, Appendix, Exh. F.

[61] Dr. Lee is an expert microscopist and physicist, who has performed analysis of asbestos and other materials (including rocks from the moon) for NASA, the EPA, the United States Navy, the United States Army, the State of California and countless other governmental and private organizations. Doc. No. 4013, Lee Report, Appendix, Exh. G.

[62] Dr. Hughson is a Board-certified pulmonologist and epidemiologist, a Rhodes scholar, and the Director of the Center for Occupational and Environmental Medicine at the University of California at San Diego. Doc. No. 4013, Hughson Report, Appendix, Exh. H at 3.

[63] Dr. Lees, Ph.D, is an professor at Johns Hopkins Bloomberg School of Public Health
(continued...)

New York.[65] This study, along with the EPA simulations in Libby, Montana,[66] a set of simulations conducted by Versar, Inc., under contract from the EPA,[67] the Pinchin Environmental Group report on the demolition of military facilities in Canada,[68] and the studies conducted by Claimants' experts in the State of Washington[69] and Silver Spring, Maryland,[70] were analyzed by Grace's four experts. Dr. Lee prepared a report which reviewed "the mineralogy, form, and exposure potential of the amphibole particles found in installed" ZAI and reviewed "the testing results reported by Claimants' experts and the opinions expressed by those

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[63](...continued)
in the Environmental Health Sciences and Engineering departments.

[64] Dr. Mlynarek, Ph.D., CIH, is an associate professor in industrial hygiene at the University of South Florida College of Public Health.

[65] P. Lees and S. Mlynarek (2003). "Report: Assessment of Potential Asbestos Exposure Resulting from Disturbance of Zonolite Vermiculite Attic Insulation", January 9, 2003. Doc. No. 4013, Exh G, at 34.

[66] EPA Phase 2 Data. Doc. No. 4013, Exh. G at 35.

[67] Versar (2002). "Preliminary Draft: Asbestos Exposure Assessment for Vermiculite Attic Insulation", Versar, Inc. Springfield, VA, June 28, 2002.

[68] Pinchin Environmental, "Final Report Site Assessment Vermiculite Removal Building E-12 C.F.B. Shilo, Shilo Manitoba" (Apr. 3, 1977). Doc. No. 4018, Attachment 25.

[69] The participants in Claimants' Washington simulations and testing were William M. Ewing, Certified Industrial Hygienist (CIH), and Tod A. Dawson of Compass Environmental, Inc.; Mr. Richard Hatfield, Dr. William Longo, and Mr. Paul Liss of Materials Analytical Services, Inc.; and Mr. Steve M. Hays, Professional Engineer (PE), CIH, Mr. Ron V. Gobbell, Fellow of the American Institute of Architects (FAIA), and Mr. Pete Cappel of Gobbell Hays Partners, Inc.

[70] *Barbanti, et al. v. W.R. Grace & Co., et al.*, No. 00-2-01756-6 (Super. Court. Wash. Dec. 20, 2000).

reports."[71] Dr. Anderson analyzed these studies and performed a risk assessment in accordance with current EPA standards.[72] Dr. Corn analyzed the studies from an industrial hygiene perspective[73] and Dr. Hughson evaluated the risk of disease for the exposure levels quantified in these studies.[74]

Claimants commissioned Mr. William M. Ewing to evaluate ZAI; to give his opinion on its friability, fiber release potential, and ability to contaminate buildings; and to opine on federal and state regulations governing asbestos, evaluation of ZAI homes, and appropriate response actions in buildings where ZAI has released fibers.[75] In his report he evaluated the Washington simulations in which he participated and commented on Grace's historical testing and the Pinchin Environmental Report. Mr. Richard Hatfield[76] and Dr. William E. Longo[77] provided a report evaluating the procedures used for dust sampling and air sampling during foreseeable

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[71] Richard J. Lee Report. Doc. No. 4013, Appendix, Exh. G.

[72] Elizabeth L. Anderson Report. Doc. No. 4011, Exh. E.

[73] Morton Corn Report. Doc. No. 4011, Exh. F.

[74] William G. Hughson Report. Doc. No. 4013, Exh. H.

[75] William M. Ewing, "Zonolite Attic Insulation Report" (Mar. 19, 2003). Doc. No. 4019, Attachment 28 to Memorandum in Support of Claimants Motion for Summary Judgment (reflected on docket as Main Document).

[76] Mr. Hatfield is a specialist in material analysis and has been actively engaged in asbestos related services since 1979.

[77] Dr. Longo is an expert in the fields of microscopy, materials science and engineering, and asbestos analysis and evaluation; and the primary author of the ASTM method D-5755-95 entitled "Micro-Vacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentration".

homeowner activities.[78] Ewing, Hatfield and Longo were the primary participants in the Zonolite Insulation Exposure studies conducted for Claimants in Maryland and Washington.

Additionally, ZAI Claimants offered two case reports of individuals (Harashe and Liebsch) who allegedly contracted mesothelioma from exposure to ZAI. They were introduced in a report by Claimants' medical expert, Dr. Henry Anderson.[79] His opinions were based on the court opinion in Mr. Harashe's personal injury lawsuit and on the court transcript and some medical records of Mr. Liebsch.[80] Grace provided a medical study conducted by the EPA in Libby, Montana, which included ZAI.[81]

Claimants also provided additional evidence regarding asbestos contamination in public and commercial buildings[82] and evidence regarding the health effects of asbestos in general. Both parties submitted numerous EPA documents and technical reports, manuals, handbooks and articles covering the various techniques, theories, analyses, concepts and apparatuses employed by the experts in their testing and analysis.

We have considered all of the evidence and base our findings and conclusions from the evidence, as set forth below.

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[78] Richard Hatfield & William Longo, Zonolite Attic Insulation Report (April 4, 2003), Doc. No. 4019, Attachment 43.

[79] Excerpts from the April 30, 2003, Deposition of Henry A. Anderson, M.D., Doc. No. 4013, Exh. T. *See also* Affidavit of Henry A. Anderson, Doc. No. 2045, Exh. F.

[80] Doc. No. 4013, Exh. T, and Doc. No. 2045, Exh. F.

[81] Agency for Toxic Substances and Disease Registry, Year 2000 Medical Testing of Individuals Potentially Exposed to Asbestiform Minerals Associated with Vermiculite in Libby, Montana: A Report to the Community (August 23, 2001). Doc. No. 4011, Exh. A.

[82] Doc. No. 4204 at 18, n. 55.

a. ***Case Studies***

The fundamental scientific limitations of anecdotal evidence have led federal courts to consistently reject individual case reports as a reliable basis for medical causation opinions. *See Allison v. McGhan Med. Corp.*, 184 F.3d 1300 (11th Cir. 1999); *Hollander v. Sandoz Pharm. Corp.*, 95 F.Supp.2d 1230 (W.D. Okla. 2000), *aff'd in pertinent part*, 289 F.3d 1193 (10th Cir.), *cert. denied* 537 U.S. 1088 (2002); *Brumbaugh v. Sandoz Pharm. Corp.*, 77 F.Supp.2d 1153 (D. Mont. 1999); *Casey v. Ohio Med. Prod.*, 877 F.Supp. 1380 (N.D. Cal. 1995); *Wade-Greaux v. Whitehall Laboratories, Inc.*, 874 F.Supp. 1441 (D.VI 1994).

> As we shall see, anecdotal reports can provide some information, but they are more useful as a stimulus for further inquiry than a basis for establishing association. . . . 'Anecdotal evidence' means reports of one kind of event following another. Typically, the reports are obtained haphazardly or selectively, and the logic of "*post hoc, ergo propter hoc*" does not suffice to demonstrate that the first event causes the second. Consequently, while anecdotal evidence can be suggestive, it can also be quite misleading.

Reference Manual on Scientific Evidence 355, Note 20 (2d ed. 2000). Indeed some courts have suggested that attempts to infer causation from anecdotal reports are inadmissible as unsound methodology under *Daubert*. *See Haggerty v. Upjohn Co.*, 950 F.Supp. 1160, 1163-64 (S.D. Fla. 1996); *Cartwright v. Home Depot U.S.A., Inc.*, 936 F.Supp. 900, 905 (M.D. Fla. 1996).

As noted earlier, ZAI Claimants' medical expert, Dr. Henry Anderson, based his opinion that ZAI caused two individuals to contract mesothelioma on the court opinion in Mr. Harashe's personal injury lawsuit and the court transcript and some medical records of Mr. Liebsch. Because his evaluation was so limited, Dr. Anderson was unaware of significant alternate

exposure pathways.[83] Dr. Anderson had no information regarding Mr. Harashe's exposure to asbestos through his job as a maintenance worker for a public school district.[84] Dr. Anderson also assumed that Mr. Liebsch had no occupational exposure to asbestos.[85] However, Mr. Liebsch worked in a boiler room of a hospital and family members testified that he came home from work covered with white dust and that he told his wife to wash his clothing separately.[86] Because Dr. Anderson's opinion was rendered without regard to all relevant facts, it is deficient, thereby calling into question even the marginal utility the case studies may have possessed concerning causation. Thus, use of the individual case studies was not sound methodology, the assumptions made were not scientifically or factually valid, and Dr. Anderson's analysis is unreliable. Dr. Anderson's opinion, therefore, does not satisfy *Daubert* and its progeny and is not admissible. We exclude this evidence. No other evidence of a causal link between ZAI and personal injury was presented. To the extent Dr. Anderson's methodology would pass the *Daubert* test, we give no weight to his opinion because the assumptions upon which it was based did not conform to or account for the evidence of additional sources of asbestos exposure.

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[83] Doc. No. 4009, Brief of W. R. Grace & Co. in Support of Motion for Summary Judgment, at 29-30.

[84] Deposition of Henry A. Anderson, M.D., Doc. No. 4013, Exh. T at 82-84.

[85] *Id.* at 86-102. Dr. Anderson admitted that he did not review all of the deposition testimony and simply assumed that Mr. Liebsch had no occupational exposure.

[86] *Id.* at 99-100.

b. ***Epidemiological Evidence***

Epidemiological studies examine the incidence, distribution, and etiology of disease in human populations to better understand disease causation and facilitate disease prevention. Federal Judicial Center, *Reference Guide on Epidemiology,* in *Reference Manual on Scientific Evidence* 335 (2d ed. 2000). Courts have increasingly relied on epidemiological studies as an appropriate methodology for demonstrating a causal relationship between a chemical compound and a set of symptoms or disease.

"The primary generally accepted methodology for demonstrating a causal relation between a chemical compound and a set of symptoms or disease" is the use of epidemiological studies. *Siharath v. Sandoz Pharmaceuticals Corp.*, 131 F.Supp.2d 1347, 1356 (N.D. Ga. 2001), *aff'd* 295 F.3d 1194 (11th Cir. 2002). *See also Hollander v. Sandoz Pharms. Corp.*, 95 F.Supp.2d 1230, 1235 n.14 (W.D. Okla. 2000)(quoting *In re Breast Implant Litigation*); *In re Breast Implant Litigation*, 11 F.Supp.2d 1217, 1224 (D. Colo. 1998).

> Epidemiologic evidence identifies agents that are associated with an increased risk of disease in groups of individuals, quantifies the amount of excess disease that is associated with an agent, and provides a profile of the type of individual who is likely to contract a disease after being exposed to an agent. Epidemiology focuses on general causation (i.e., is the agent capable of causing disease?) rather than specific causation (i.e., did the agent cause disease in a particular individual?).

Reference Manual on Scientific Evidence 336 (2d ed. 2000). *See also, In re Breast Implant Litigation, supra*, 11 F.Supp.2d at 1224 (discussion of general and specific causation with line of corresponding cases). Epidemiological studies identify and quantify associations between agents and diseases. These associations support but cannot deductively prove causation; "indeed, all empirically based science cannot affirmatively prove a causal relationship." *Reference Manual*

on Scientific Evidence at 336. Instead, causation can be proven through probabilistic means from epidemiological data which is based on the strength of the association, the strengths and weaknesses of the studies' design and implementation, and an assessment of the studies' fit with other scientific knowledge. *Reference Manual on Scientific Evidence* at 337.

The strength of an association is measured in terms of relative risk, odds ratio, or attributable risk. Relative Risk (RR) is defined as the incidence rate in the exposed divided by the incidence rate in the unexposed. *Id.* at 348, 349. Incidence rate is used to express the risk that, within a specified period of time, a member of the relevant population will develop the disease. *Id.* A risk of 1.0 means that the risk of disease to individuals exposed to an agent is the same as that to unexposed individuals. *Id.* Grace argues that Claimants must establish a 2.0 relative risk for ZAI, which would imply a 50 percent likelihood that an exposed individual's disease was caused by the agent. This is especially true in this case where all experts agree that low levels of exposure do not cause a risk to health.[87] Generally, the greater the relative risk the easier it is to infer causation. *Id.* at 348, 349. Smoking studies have shown that smokers are ten times more likely (RR 10.0) then nonsmokers to have lung cancer. A substantial number of courts have accepted RR of 2.0 in epidemiological studies to show causation as it corresponds to the burden of proof to a preponderance of the evidence; *i.e.*, requiring the finder of fact to find that what is sought to be proved is more likely true than not true. *See DeLuca v. Merrell Dow Pharms., Inc.*, 911 F.2d 941, 958-59 (3d Cir. 1990); *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311, 1320 (9th Cir.), *cert denied*, 516 U.S. 869 (1995). However, some courts have allowed slightly lower rates (*e.g.*, 1.75 or 1.5) when other factors such as genetics combine

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[87] *See* note 53, *supra.*

to raise the risk to 2.0. *See In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 758-59 (3d Cir. 1994), *cert. denied sub nom. General Elec. Co. v. Ingram*, 513 U.S. 1190 (1995). We have no such evidence on this record and no reason to lower the rate below 2.0. Therefore, we accept Grace's position that Claimants must establish causation by a 2.0 relative risk rate. Claimants have not met that burden of proof.

There are two types of epidemiological studies: experimental and observational. *Reference Manual on Scientific Evidence* at 338-47. Experimental studies include randomized trials and clinical trials and are considered the gold standard for determining the relationship between an agent and a disease. *Id.* In these studies, the subjects are randomly assigned either to a group exposed to the agent in question or to another group exposed to a placebo. *Id.* Generally, experimental studies are used on agents suspected to be helpful, such as new drugs or medical treatments. Therefore, the majority of epidemiological studies are observational, where a group of individuals already exposed to an agent of interest is compared to another group not exposed.

An epidemiological study establishing a relationship between ZAI and asbestos related disease would be extremely useful in demonstrating an unreasonable risk of harm. However, neither party has introduced such a study or even a study involving similar vermiculite products or similar asbestos exposure levels. The evidence most similar to this case was examined in the ATSDR Libby study introduced by Grace,[88] which included ZAI and other vermiculite sources of asbestos exposure. The project resulted from various requests to declare a public health

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[88] Agency for Toxic Substances and Disease Registry, Year 2000 Medical Testing of Individuals Potentially Exposed to Asbestiform Minerals Associated with Vermiculite in Libby, Montana: A Report to the Community (August 23, 2001). Doc. No. 4011, Exh. A.

emergency in Libby, Montana, based on the allegedly heightened threat these sources of asbestos exposure could pose to a population in Libby which was already heavily exposed because of its involvement with and proximity to the Libby Mine. The results of the study disproved the allegation and showed no heightened or aggravated risk of asbestos disease from the presence of ZAI in residents' attics.[89] The results showed no association between ZAI and asbestos disease and the EPA subsequently rejected the requests to declare a public health emergency in Libby, Montana. However, we note that the observational study was only conducted on Libby residents. Because it lacked a control group, it is distinguishable from an experimental epidemiological study. *See Reference Manual on Scientific Evidence* at 338-47. Another difficulty encountered in conducting an epidemiological study in Libby is the difficulty in isolating one factor, such as ZAI, considering all the other potential exposure pathways.[90] However, even in Libby, the study did not show a heightened risk from ZAI.

In assessing the "unreasonable" risk of harm alleged in this matter, the court notes the lack of an epidemiological link between ZAI and asbestos disease. ZAI has been in use in homes for over 80 years. Claimants argue that studies were never done because Grace concealed contamination for so long.[91] However, the EPA warning surrounding VAI, which includes ZAI, *see* note 26 and accompanying test, *supra*, was published more than 20 years ago. Estimates provided indicate that from 3 million to 30 million homes contain ZAI[92] and that over 80 years

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[89] *Id.*

[90] *See* Doc. No. 4294 at 3; Doc. No. 4204 at 20, 21.

[91] *See* Doc. No. 4007 at 7-9.

[92] *See* note 14, *supra.*

have passed with ZAI in use. Thus, a sufficient period of time has passed during which symptoms would manifest.[93] Moreover, the pool of homes with ZAI and the number of individuals exposed are plentiful and sufficient for a complete study to be conducted. Thus, facts to establish causation should be available. Nonetheless, but for Dr. Henry Anderson's opinion based on case studies, which, even if admissible, we do not credit, no such evidence has been produced.

In *Renaud v. Martin Marietta Corp.*, 749 F.Supp. 1545 (D. Colo. 1990), the court rejected the plaintiffs' assertion that epidemiological studies are not required as proof in order to establish a contaminant-injury, cause-effect relationship in a toxic tort case. In that case, all the examples plaintiffs cited involved individuals and not identifiable groups or communities. In instances involving individuals, "it is impossible to submit corroborative epidemiological evidence because it is impossible to identify a group or a community which has been exposed to the alleged carcinogen, and an epidemiological study therefore cannot be conducted." *Id.* at 1554. The case studies cited by the defendant, however, involved known exposures of entire communities to alleged carcinogens. The *Renaud* court relied on other cases to find that when read together they require epidemiological evidence to be submitted when the alleged exposures were in an identifiable group or community. *Id.* at 1553-55. Under those conditions, an epidemiological study can be conducted. *Id.* As stated above, the facts in this case lend themselves to an epidemiological study. Considering that ZAI has been in use for over 80 years, it is logical to assume that most homes with ZAI would have had multiple inhabitants and/or owners; thus there is an enormous group from which to conduct an epidemiological study.

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[93] *See* note 46, *supra.*

The ATSDR Libby Study introduced by Grace approximates a complete epidemiological study and it supports the Grace's contention that ZAI does not pose an unreasonable risk of harm to homeowners. The analysis showed no heightened risk to the Libby community; however, given that the study lacked a control group the court will also look at other alternatives for assessing risk. Because airborne asbestos is a known carcinogen, evaluations of the risk associated with the presence of ZAI in a homeowner's attic can be calculated using dose-response figures taken from animal toxicity and epidemiological studies that dealt with higher asbestos exposure rates than are present in this case. *See Reference Guide on Toxicology,* in *Reference Manual on Scientific Evidence* at 401 (2d ed. 2000). Toxicological dose response evidence is used in both regulatory standards and risk assessment evaluations in tort litigation. *Id.* at 404.

c. ***Regulatory Standards and Risk Assessment***

Without the benefit of adequate epidemiological evidence, the court next examines regulatory standards and risk assessment studies to evaluate the health risks associated with ZAI. The only regulatory standards addressed or provided by either party were the Occupational Safety and Health Administration (OSHA) standards found in 29 C.F.R. §1910.1001. This section applies to all occupational exposures to asbestos in all industries, except construction and shipbuilding which are covered by other sections.[94] The only risk assessment provided was conducted for Grace by Dr. Elizabeth L. Anderson, a former director of the EPA's Risk

[94] 29 C.F.R. §1926.1101 and 29 C.F.R. §1926.1001 respectively.

Assessment Programs.[95] Additionally, Dr. Morton Corn conducted an evaluation of the risk associated with ZAI according to the Industrial Hygiene Paradigm.[96] The Industrial Hygiene Paradigm is a well known paradigm or model in the occupational and environmental health field, and involves recognition, evaluation, and control of potentially hazardous material. Morton Corn, *The Role of Control Technologies in Preventing Occupational Disease*, 39 Arch. Env. Health 235-40 (1984).

Both OSHA regulatory standards and EPA risk assessment studies require a measurement of asbestos exposure levels for individuals. As illustrated by the details of the OSHA standard and the EPA's risk assessment paradigm, this measurement is conducted by taking air samples during workplace activities.[97] The OSHA standard requires a measurement of exposure levels based on a detailed air sampling procedure and analysis. The general guideline is published at 29 C.F.R. §1910.1001:

> (c) Permissible exposure limit (PELS)--
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> (1) Time-weighted average limit (TWA). The employer shall ensure that no employee be exposed to an airborne concentration of asbestos in excess of 0.1 fiber[98] per cubic centimeter of air as an eight (8)-hour time-weighted average (TWA) as determined by the method prescribed in Appendix A to this section, or by an equivalent method.
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> (2) Excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic

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[95] Doc. No. 4009 at 7.

[96] Addressing Potential Health Concerns Associated With Inhalation of Zonolite Attic Insulation. Dr. Morton Corn, (April 7, 2003). Doc. No. 4011, Exh. F.

[97] In an attempt to apply OSHA standards to homeowners, both parties used simulations of homeowner activities in place of workplace activities in their studies.

[98] 29 C.F.R. 1910.1001(b) - "Fiber means a particulate form of asbestos 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1." This will be significant in the discussion regarding analysis of air samples.

> centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes as determined by the method prescribed in Appendix A to this section, or by an equivalent method.
> (d) Exposure monitoring–
> (1) General. (l) Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30 minute short-term exposures of each employee.

The OSHA regulation for workers exposed to asbestos sets limits for both an eight hour time weighted average ("TWA") and a 30 minute excursion limit. *Id.* These standards are based on the number of fibers per cubic centimeter of breathing zone air samples taken during the workday. *Id.* Appendix A to 29 C.F.R. §1910.1001 also gives details and standards for the analysis and counting procedures to be applied to the air samples. The EPA risk assessment paradigm calculates risk using dose theory[99] and exposure levels. The EPA risk assessment paradigm contains the following four factors:

> 1) Hazard Identification: the identification of a compound as a potential hazard based on animal toxicity studies or human epidemiology studies.
> 2) Dose-response assessment: the assessment of the dose required to cause particular health effects.
> 3) Exposure assessment: an estimation of the exposure of the compound from the particular activity in question.
> 4) Risk characterization: characterization of the evidence that an agent might be a human carcinogen (or cause other non-cancer effects) together with a comparison of the exposure and dose-response to estimate the potential risk, accounting for uncertainties. [100]

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[99] "'The dose makes the poison'; this implies that all chemical agents are intrinsically hazardous—whether they cause harm is only a question of dose. Even water, if consumed in large quantities, can be toxic." *Reference Guide on Toxicology,* in *Reference Manual on Scientific Evidence 403 (2d ed. 2000); see also* Ellen K. Silbergeld, *The Role of Toxicology in Causation: A Scientific Perspective*, 1 Courts. Health Sci. & L. 374, 378 (1991).

[100] The EPA's risk paradigm was first published in 1983 by the National Research Council (NRC) in *Risk Assessment in the Federal Government: Managing the Process* (NRC, 1983). "It is now considered an essential text for health risk assessment." Doc. No. 4011, Exh. E at 8, 9.

Exposure assessment is an estimation of exposure to a compound from particular activities and can be measured using a protocol similar to that used by OSHA[101] adjusted to accommodate homeowner activities. Both parties used simulations with these adjustments.

Daubert objections[102] were raised as to the air sampling results provided by the parties.[103] As explained earlier, *Daubert* requires that the method used to gather the data be scientifically valid and that the reasoning or methodology be properly applied to the facts in issue. Reliability was questioned with regard to how the air sampling was conducted and "fit" was at issue where the results were inconsistent with the requirements of OSHA risk assessment standards. The air sampling results were the most contentious and complex portion of the evidence and testimony presented by the parties. As stated earlier, both parties conducted their own studies and testing of air samples and simulation of foreseeable homeowner activity. The following discussion

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[101] 29 C.F.R. §1910.1001, Appendix A.

[102] Claimants' objections: Doc. No. 4018, Memorandum, at 29-32, Doc. No. 4204 at 4-8, Doc. No. 4294 at 8. Grace's objections: Doc. No. 4205 at 6-10, Doc. No. 4009 at 24-26, and Doc. No. 4298 at 7-8. Briefs involving Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments: Doc. Nos. 4022, 4173, 4206, 4293, and 4296.

[103] The conflict between the parties during their testimony and in their various briefs was centered around Grace's *Daubert* objections to the use of dust sampling and indirect sampling by Claimants. However, objections involving the air sampling conducted by both parties are more relevant to these proceedings because air sampling provides a better indication of airborne exposure. Grace correctly argued that dust sampling in not an accepted measurement of individuals' exposure levels. *In re Armstrong World Industries, Inc.*, 285 B.R. 864, 867 (Bankr. D. Del. 2002). However, Claimants did not proffer dust sampling as a measurement of airborne exposure, and Grace's objections are misplaced. In asbestos litigation, dust sampling has been a useful tool for confirming asbestos contamination, *In re Armstrong*, 285 B.R. at 867, and identifying a potential for resuspension, *EPA Response to September 11 – WTC Residential Dust Cleanup Program: Modified-Aggressive and Aggressive Sampling* (Aug. 6, 2002), Doc. No. 4019, Exh. 77. Additionally, ZAI Claimants' experts conceded that no regulatory standard relies upon measurements of asbestos in settled dust to determine hazard. *Ewing Deposition*, Doc. 4011, Exh. C at 163; *Hatfield Deposition*, Doc. No. 4013, Exh. N at 24.

explains the processes used by the parties regarding the risk assessment formula and OSHA standards and sets forth the court's findings and conclusions.

Although Grace's expert, Dr. R.J. Lee, conducted his own analysis in accordance with NIOSH 7400 (Asbestos and other fibers by Phase Contrast Microscopy) and NIOSH 7402 (Asbestos by Transmission Electron Microscopy)[104] as required by OSHA,[105] he "slightly modified" the TEM procedure to exclude certain fibers from his counts. Dr. Lee stated he did so to "fully identify and enumerate the cleavage fragments."[106] Cleavage fragments are not asbestiform.[107] The air sampling data provided by Claimants was not analyzed personally or

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[104] National Institute for Occupational Safety and Health (NIOSH), *NIOSH Manual of Analytical Methods (NMAM)*, 4th ed. DHHS (NIOSH) Publication No. 94-113 (1994). NMAM is a collection of methods for sampling and analysis of contaminants in workplace air, and in the blood and urine of workers who are occupationally exposed. These methods have been developed or adapted by NIOSH or its partners and have been evaluated according to established experimental protocols and performance criteria. NMAN also includes chapters on quality assurance, sampling, portable instrumentation, etc.

[105] Appendix A to 29 C.F.R. 1910.1001 specifies the procedure for analyzing air samples for asbestos. The Appendix requires Phase Contrast Microscopy ("PCM") analysis under the guidelines of the most current version of either OSHA method ID-160 or NIOSH 7400. Because PCM does not positively identify asbestos fibers, the appendix suggests differential counting technique (the practice of excluding certain kinds of fibers from the fiber count because they do not appear to be asbestos) techniques using TEM to achieve a more accurate count. Occupational Safety and Health Administration (OSHA), 29 C.F.R. §1910.1001, Appendix A.

[106] Doc. No. 4011, Exh. G at 34. Asbestos minerals, such as tremolite, have non-asbestos analogs commonly referred to as "cleavage fragments." Lee Report, Appendix, Exh. G at 11; Ilgren Report, Appendix, Exh. S at 4. Cleavage fragments are non-fibrous, non-asbestos minerals formed when amphibloes are crushed. Fragments are cleaved away from the main crystal mass and some long thin fragments may result. ZAI Claimants' experts agree that cleavage fragments are not asbestiform. *Id.* Ewing Deposition, Appendix, Exh. C at 85-86; Hays Deposition, Appendix, Exh. M at 24-25. "Cleavage Fragment: Mineral Particles formed by comminution of minerals, especially those characterized by parallel sides and a moderate aspect ratio (usually less than 20:1). 29 C.F.R. §1910.1001, Appendix A.

[107] Ewing Deposition, Doc. No. 4011, Exh. C at 85-86; Hays Deposition, Doc. No. 4013,

(continued...)

microscopically by Dr. R.J. Lee. Dr. Lee did not replicate the tests submitted by Claimants. Rather he looked at the analysis of air sample results from a report provided by Claimants and authored by P. Lees and S. Mylnarek.[108] Dr. Lee then modified the results of the Claimants' air sampling data to account for his alteration of NIOSH 7402 TEM procedure from his own tests. This was accomplished by applying a ratio, based on the difference between Dr. Lee's NIOSH 7402 results and modified NIOSH 7402 results, to the other air sampling data. The concept of cleavage fragments is a scientifically valid concept;[109] however, Dr. Lee's alteration of NIOSH has not been peer reviewed or published, and thus fails one of the tests of reliability noted in *Daubert*. In the United States' Statement Regarding Asbestos Analysis Issues in W.R. Grace's Motion for Summary Judgment and Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments, the government recommends that this court reject Dr. Lee's adjustments.[110] Dr. Lee's method regarding cleavage fragments is not generally accepted. Without peer review

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[107](...continued)
Exh. M at 24-25.

[108] P. Lees and S. Mylnarek (2003) "Report: Assessment of Potential Asbestos Exposure Resulting from Disturbance of Zonolite Attic Insulation, January 9, 2003. Doc. No. 4013, Exh G, at 34.

[109] *See* Dr. E.B. Ilgren, Expert Report re WR Grace - Related Attic Insulation Asbestos Litigation: The Biological Relevance of Tremolite Cleavage Fragments (April 10, 2003), Doc. No. 4013, Exh. S. *See also* Doc. No. 4206, Attachment (Lee Affidavit) at ¶ 47 citing G. Wylie, R.L. Virta and E. Russek (1985), "Characterizing and Discriminating Airborne Cleavage Fragments and Amosite Fibers: Implications for the NIOSH Method," Amer. Ind. Hyg. Assoc. J. 46(4): 197-201. The study itself is Exh. 20 at Doc. No. 4208. *See also* Doc. No. 4206, Attachment (Lee Affidavit) at ¶ 48 citing G. Burdett (1998), "Final Report for R42:70: Quantitative Measurement of Asbestos and Other Fibers in Bulk Materials," IR/K.MF/98/02, Health and Safety Laboratory. The study itself is Exh. 21 at Doc. No. 4209.

[110] Doc. No. 4173 at 3-10.

or publication of the adjusted counting protocol developed by Dr. Lee,[111] as required by *Daubert*, this court will grant Claimants' Motion to Exclude Dr. R.J. Lee's Opinion on Cleavage Fragments.[112] However, Dr. Lee's report and testimony is not wholly excluded. Only the portions dealing with the adjustment of counting procedures based on cleavage fragments are excluded. Alternatively, this court gives no weight to that portion of Dr. Lee's report.

Claimants presented air sampling data from three sources: their own testing,[113] Pinchinn,[114] and Grace Historical testing.[115] Grace objects to the use of the ZAI Grace historical testing conducted in the 1970s, and it is easily excluded, because the record included with these samples is insufficient to explain the methodology utilized. Claimants failed to include the protocols or standards used to conduct the testing, sampling, or analysis as required by *Daubert* and its progeny.[116] *See Daubert* 509 U.S. at 592-93. Notably, "the existence and maintenance of

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[111] "Conversion to PCME/Impact of Counting Cleavage Fragments," Doc. No. 4013, Lee Report,, Appendix, Exh. G at 38.

[112] Doc. No. 4022.

[113] William M. Ewing, "Zonolite Attic Insulation Report" (Mar. 19, 2003). Doc. No. 4019, Attachment 28. *See* note 75, *supra*.

[114] Pinchin Environmental, "Final Report Site Assessment Vermiculite Removal Building E-12 C.F.B. Shilo, Shilo Manitoba" (Apr. 3, 1977). Doc. No. 4018, Exh. 26 (reflected on the docket as first Attachment 25).

[115] Grace ZAI Test Notes (July 11, 1977)(one page handwritten note), Doc. No. 4020, Attachment 90; Binder Development Program P-204 Weedsport Spraying Tests (Mar. 1977)(testing results regarding water soluble additives for reducing airborne fibers), Doc. No. 4020, Attachment 91; Memo from R.H. Locke to H.A. Brown (Mar. 11, 1976)(contains three sentences on "Attic Fill" testing), Doc. 4018, Attachment 10.

[116] As stated in the text, the Court of Appeals for the Third Circuit expanded the *Daubert* list of four factors for determining reliability of scientific evidence to the following: "(1) whether a method consists of a testable hypothesis; (2) whether the method has been subject to

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standards controlling the technique's operation" is included in the list of factors used for determining the reliability of scientific evidence.[117] Here, we have no such evidence. Additionally, the internal Grace Memorandum which provided the historical testing results (air sampling conducted on various products, including ZAI) began with an admission that any conclusions were based on "these very few, hurried tests."[118] Further, much of the ZAI historical testing was conducted during "drop tests," not simulated homeowner exposure. "Drop tests," essentially, analyze asbestos release during the pouring of ZAI material.[119] The allegations involved in this proceeding are releases of fibers after installation is complete, and not during the very different process of initial installation. Thus, these tests do not fit the facts of the matter before us, and we exclude the ZAI Grace historical testing.

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[116](...continued)
peer review; (3) the known potential rate of error; (4) the existence and maintenance of standards controlling the technique's operation; (5) the method is generally accepted; (6) the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology and (8) the non-judicial uses to which the method has been put." *In re Paoli R.R. Yard PCB Litig.,* 35 F.3d 717, 742 n.8 (3d Cir. 1994), *cert. denied,* 513 U.S. 1190, 131 L. Ed. 2d 134, 115 S. Ct. 1253 (1995) *("Paoli II").*

[117] *Daubert* , 509 U.S. at 592-93.

[118] Memo from R.H. Locke to H.A. Brown (Mar. 11, 1976), Doc. 4018, Attachment 10.

[119] The tests used were drop tests and were described by Frederick Eaton: "A drop test was . . . a four-sided pyramid hopper mounted a certain distance from the floor. First of all, this drop test was done in an enclosed space, and the hopper was supported by four legs. The bottom of the hopper had a slide gate that could open - - could be opened and adjusted, and there were at least two pumps attached to the legs of the hopper, and then a certain number of bags, and I don't remember exactly, were placed in the hopper, and then to run the test, the pumps were turned on, and the slide gate opened to a predetermined setting and the material flowed from the hopper to the floor." Deposition of Frederick Eaton, at 25, 26 (Feb. 6, 2003), Doc. No. 4018, Attachment 8.

The Pinchinn studies were conducted during gross demolition of ceiling drywall and subsequent dispersement of insulation and abatement-style insulation removal for buildings at a Canadian military base.[120] The procedural record for these tests show that the tests deviated from protocol[121] and the activities and building types are not consistent with domestic exposure to ZAI at issue in this case. Again, there is no fit and we sustain Grace's objection to the admissibility of these facts.

The study commissioned by Claimants was the "Zonolite Insulation Exposure Studies" conducted by Claimants' expert, William M. Ewing.[122] This study involved the most extensive and thoroughly documented simulations of those presented by Claimants, but still has some deficiencies. The report included only excursion limit[123] results and never examined the other half of the OSHA regulations, the 8-hour time weighted average ("TWA").[124] Additionally, the

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[120] Pinchin Environmental, "Final Report Site Assessment Vermiculite Removal Building E-12 C.F.B. Shilo, Shilo Manitoba" (Apr. 3, 1977). Doc. No. 4018, (First) Attachment 25.

[121] The tests deviated from the protocols of the NIOSH 7402 TEM analysis standards by using an indirect preparation procedure (as indicated by "Fraction Re-filtered" on the data tables). Indirect preparation is a method of dissolving and sonicating samples prior to analysis. On each sample, only 10 grid openings were used, rather than the 40 mandated by NIOSH 7402. Additionally, NIOSH 7402 requires the counting of fibers longer than 5 μm and wider than 0.25 μm, but the Pinchin counts included fibers shorter than 5 μm and thinner than 0.25 μm. *See* Richard J. Lee Report. Doc. No. 4013, Appendix, Exh. G.

[122] William M. Ewing, "Zonolite Attic Insulation Report" (Mar. 19, 2003), Attachment 2 (Zonolite Insulation Exposure Studies). Doc. No. 4019, Attachment 28. *See* note 75, *supra*.

[123] "Excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes as determined by the method prescribed in Appendix A to this section, or by an equivalent method." 29 C.F.R. §1910.1001.

[124] "Time-weighted average limit (TWA). The employer shall ensure that no employee (continued...)

Ewing report did not account for the lifetime exposure component of assessing risk, as did Dr. Morton Corn and Dr. Elizabeth Anderson in their respective reports. Nonetheless, the study, as far as it goes, is relevant to this issue and satisfies *Daubert*.

The results of the excursion limit testing showed some fiber levels above that permitted by OSHA standards but only when the tests were run while asbestos was actually removed. Under the Claimants' calculations, fiber levels for asbestos removal were the only activities which exceeded OSHA standards.[125] No other foreseeable homeowner activity, such as cleaning boxes stored in the attic, produced fiber levels that exceed OSHA regulations. Further, OSHA standards are intended for exposures of up to forty hours a week for up to forty years.[126] These standards far exceed what a typical homeowner would encounter due to ZAI in the attic. At most, ZAI removal would occur only once in a home. Further, major renovations and foreseeable homeowner activities which disturb ZAI, at best, would occur intermittently and not forty hours a week for 40 years. Thus, the Ewing report does not support unreasonable risk of harm due to typical homeowner activities.

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[124](...continued)
be exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8)-hour time-weighted average (TWA) as determined by the method prescribed in Appendix A to this section, or by an equivalent method." 29 C.F.R. §1910.1001.

[125] "Zonolite Insulation Exposure Studies" Attachment 2, at 9-14, in William M. Ewing, "Zonolite Attic Insulation Report" (Mar. 19, 2003), Doc. No. 4019, Attachment 28. *See* note 75, *supra*.

[126] OSHA regulations are based on a forty hour work week and forty year career. *See* Dr. Morton Corn, *Addressing Potential Health Concerns Associated With Inhalation of Zonolite Attic Insulation*, (April 7, 2003). Doc. No. 4011, Exh. F. Homeowners, on the other hand, would not spend this amount of time in their attics. *See also* 29 C.F.R. §1910.1001.

The point to exposure data is to assess how often a person would breathe in asbestos fibers. The only known danger from asbestos is based upon respiration. Grace's expert, Dr. Morton Corn, explained that the potential risk posed by inhaling airborne asbestos, according to the fundamental tenets of industrial hygiene and public health, is dependent not only on the concentration of asbestos in the inhaled air, but also on the frequency and duration of such exposures over a person's entire lifetime.[127] Dr. Corn explained that the "dosage of inhaled fibers to the lungs is very low when compared to the historical lifetime dosages of asbestos inhaled in the past by asbestos workers, or to dosages permitted to be inhaled during a working lifetime with current occupational standards.[128] Claimants also point out that OSHA standards were never intended to apply outside the workplace.[129] We agree. However, there are no standards directly applicable to home attics and the OSHA standards provide a base line for assessing risk of harm from exposure to airborne asbestos. The toxicological rule of dose response, a fundamental tenet of industrial hygiene and public health, provides that the potential health risk posed by inhaling airborne asbestos is a function not only of the concentration of asbestos in the inhaled air, but also of the frequency and duration of such exposures to asbestos over a person's lifetime.[130] The OSHA standards account for lifetime exposure of workers, not

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[127] *See* Corn Report, Doc. No. 4011, Exh. F at 13, 18-19, and Supplemental Report at 4, 6.

[128] Doc. No. 4011, Exh. F at 18.

[129] Ewing Report, Doc. No. 4019 at 16. "The OSHA standards do not apply to homeowners or children."

[130] Doc. No. 4011, Exh. F at 19. *See also*, Dr. Elizabeth Anderson's report, Doc. No. 4011, Exh. E, at 10 ("[T]he cancer risk associated with asbestos exposure is . . . determined as a function of the frequency, magnitude, and duration of exposure oven a lifetime.").

of homeowners.[131] The circumstances of exposure (i.e., frequency, duration and in the case of homeowners, location) must be taken into account in order to determine if the risk, if any, is unreasonable. Here, all tests conducted regarding foreseeable homeowner activities other than removal of ZAI from a home showed virtually no risk, let alone an unreasonable risk.[132] The evidence submitted indicates that outside the attic, when disturbed, the risk of exposure is negligible.[133] In the attic, even on disturbance, fiber levels did not exceed accepted standards employed in the workplace.

The risk assessment conducted by one of Grace's experts, Dr. Elizabeth Anderson, went beyond Claimants' study and accounted for the lifetime exposure of homeowners.[134] We accept her study, which both satisfies *Daubert* and fits this case.

The risk assessment done by Dr. Elizabeth Anderson, on behalf of Grace, used exposure assessment data[135] and dose response[136] to calculate risk. That calculation can be compared to the EPA's statutory levels for acceptable risk:

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[131] *See* note 126, *supra.*

[132] *See* Dr. Elizabeth Anderson's report, Doc. No. 4011, Exh. E, at 3 (even contractors working in homes with ZAI face risks similar to or less than those commonly accepted by regulatory agencies and individuals in the workplace).

[133] See notes 54-57 and accompanying text, *supra.*

[134] Elizabeth L. Anderson, *Assessment of the Potential Risks to Homeowners and Residential Contractors From Asbestos Exposure Associated with Vermiculite Attic Insulations* (Elizabeth L. Anderson Report), Doc. No. 4011, Exh. E.

[135] Dr. Elizabeth Anderson used exposure assessment data provided by both Claimants and Grace. "Table IV-3. Summary of the Usefulness of Each VAI Exposure Study for Risk Assessment," Doc. No. 4011, Exh. E, at 23.

[136] *See* note 99 and accompanying test, *supra.*

> For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper count lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response. The 10^{-6} risk level shall be used as the point of departure for determining remediation goals for alternatives when ARARs [Applicable or Relevant and Appropriate Requirements] are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure.

40 C.F.R. §300.430(e)(2)(i)(A)(2). The EPA's range for acceptable risk of 10^{-4} to 10^{-6} can also be expressed as 0.01 percent to 0.0001 percent. As a frame of reference, the risk of being struck by lightning is 0.002 percent; the risk of dying from a bicycle accident is 0.019 percent; fire 0.084 percent; drowning 0.11 percent; food poisoning 0.12 percent; homicide 0.45 percent; car accident 1 percent; alcohol 1.1 percent; stroke 14 percent; heart disease 18 percent.[137] Dr. Anderson explained that at the current Permissible Exposure Limit ("PEL"), OSHA estimates that a worker exposed for 40 years would have a risk of contracting an asbestos related disease of 3.4×10^{-3} (or 0.34 percent). This risk for workers is above that permitted under EPA regulations, *see* 40 C.F.R. 330.430, but homeowner risk due to exposure to attic insulation is lower than those exposed in the workplace.[138] Dr. Anderson concluded that "the low risks that were estimated for residents and contractors [working in homes with ZAI] are similar to or less than the risks that are commonly experienced and accepted by individuals and regulatory agencies, both as the result of environmental causes or other common activities."[139] For example, the risk Dr. Anderson calculated for living in a home with ZAI was less than the risk of

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[137] Elizabeth L. Anderson, *Summary of Estimated Lifetime Mortality Risks for Various Causes* in Elizabeth L. Anderson Report, Doc. No. 4011, Exh. E at 55. (values were adapted from data on the Harvard Center for Risk Analysis website. www.hcra.harvard.edu)

[138] Elizabeth L. Anderson Report. Doc. No. 4011, Exh. E at 52.

[139] Elizabeth L. Anderson's Report, Doc. No. 4011, Exh. E, at 3.

dying in a bicycle accident or by drowning. The results established by the Anderson risk assessment[140] were all within the acceptable target range of risk, 10^{-4} to 10^{-6}, commonly accepted by EPA, and far below risk levels associated with OSHA standards for worker protection.[141]

Claimants provided no risk assessment, but did object to Dr. Anderson's. However, Claimants' objection is based on inaccurate information. Claimants alleged that

> while Dr. Anderson is a qualified risk assessor, her calculations are totally dependent on the data supplied by Grace. This data is infected with unwarranted assumptions and totters on the three-legged stool of Dr. Lee's 'creative' microscopy. The old adage 'garbage in, garbage out', is amply proven here. Indeed, Dr. Anderson's equations condemn Grace's position when more realistic exposure scenarios are modeled.[142]

Claimants argue that because Dr. Anderson used the problematic information provided by Dr. Lee, which excluded cleavage fragments from sample counts, her results are suspect. However, Dr. Anderson used the exposure levels without Dr. Lee's adjustments for cleavage fragments. She included cleavage fragments in all of the calculations made during her risk assessment.[143] "All of the risks for residents were well within EPA's risk range of 10^{-4} and 10^{-6}, or below, even including cleavage fragments."[144] Dr. Anderson did not rely on or utilize the cleavage fragment portions of Dr. Lee's report, which this court has excluded from evidence. Claimants raised other objections based on a dispute with Dr. Anderson's assumptions but provided no

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[140] Elizabeth L. Anderson Report. Doc. No. 4011, Exh. E at 44-51.

[141] Doc. No. 4009 at 10 and Doc. No. 4011, Exh. E at 8-9.

[142] Doc. No. 4204 at 21.

[143] Doc. No. 4011, Exh. E at 44-46.

[144] Id. at 44.

assumptions of their own. We accept Dr. Anderson's assumptions because we have been provided nothing to the contrary and they are reasonable given the facts of this case. Therefore, Claimants' objection to Dr. Anderson's risk assessment has no merit.

The court accepts Dr. Anderson's analysis and findings, which substantiate that Claimants are not exposed to greater health risks from ZAI than otherwise and that ZAI poses no unreasonable risk of harm sufficient to support claims for property damage.[145] Dr. Anderson's methodology is clearly articulated and is capable of repetition and peer review.

CONCLUSION

For the reasons provided above, Claimants' Motion for Partial Summary Judgment is denied without prejudice although the court will enter an order specifying that there is no dispute regarding the fact that ZAI is contaminated with asbestos and can release asbestos fibers when disturbed during foreseeable homeowner activities. However, the contamination and release adduced from the evidence in this case do not establish an unreasonable risk of harm from ZAI home attic insulation.

Regarding the cross-motions for summary judgment, the law is clear that in order to succeed on a motion for summary judgment, the moving party bears the initial responsibility of identifying an absence of a genuine issue of material fact as to an essential element of the nonmovants' case. *See Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986). Debtors met this burden when they provided risk assessment, industrial hygiene evaluation, and the ATSDR

[145] Elizabeth L. Anderson Report, Doc. No. 4011, Appendix, Exh. E.

Libby Study[146] to support a finding that ZAI does not pose an unreasonable risk of harm. The burden then shifted to Claimants to set forth affirmative evidence and specific facts establishing the existence of a material fact in dispute of an element essential to the case. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 249-50 (1986); *Aronow Roofing Co. v. Gilbane Bldg. Co.*, 902 F.2d 1127, 1128 (3d Cir. 1990). Claimants were required to show a disputed material fact to establish that ZAI poses an unreasonable risk of harm. Claimants failed to provide any epidemiological evidence or any risk assessment. They have shown no material fact in dispute. Claimants cited to the OSHA standard as an applicable regulatory yardstick, but failed to account for the lifetime exposure differences between the workplace and a home attic insulated with ZAI. In addition, the evidence established that the risk of exposure from ZAI in the home is less than that of dying in a bicycle accident, by drowning, or from food poisoning.

The various *Daubert* objections have been addressed in this opinion and will be incorporated into an order.

Without any scientifically reliable evidence indicating that ZAI poses an unreasonable risk of harm, this court must grant Grace's motion for summary judgment in part and deny Claimants' motion for summary judgment in part, limited to the threshold issue of unreasonable risk of harm as it pertains to all proofs of claim. While the determination made herein may prove to be fatal to the property damage claims, several different theories of liability were proposed in the individual proofs of claim and may still need to be addressed. A status conference will be scheduled to discuss the form of an order regarding disposition of the proofs of claim; that is,

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[146] Agency for Toxic Substances and Disease Registry, Year 2000 Medical Testing of Individuals Potentially Exposed to Asbestiform Minerals Associated with Vermiculite in Libby, Montana: A Report to the Community (August 23, 2001). Doc. No. 4011, Exh. A.

which are subject to dismissal based upon the findings herein and what claims, if any, may still remain. Further, if any remain, the status conference will address the need, if any, for class treatment of any claims going forward.

An appropriate order will be issued.

DATE: December 14, 2006

Judith K. Fitzgerald
jmd
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United States Bankruptcy Judge

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The case administrator shall send electronic copies of the opinion and order to the parties listed on the current service list.